

RICHLINE GROUP

A Berkshire Hathaway Company

REASONS TO AVOID LOW K GOLD PLATING

In low karat gold micron electroplating, we have to use either Au/Cu or Au/Ag chemistry. Au/Cu chemistry plating color for 14K is too pink (5N) & Au/Ag chemistry plating color is too green. We have to give a top coat of 0.1 micron of high karat gold (>23K) to achieve a Hamilton color (1N/2N) over low karat gold plating.

Doing low karat gold plating & covering it with nominal high karat gold for color, defeats the purpose of gold plated Jewelry. If the top flash gold will wear out then actual gold alloy color (pink/green) will be exposed (pink/green) and will tarnish too fast.

Achieving exact K (10/14/18) in low K electroplating is practically impossible.

We cannot identify gold purity of plating thickness on sterling silver by XRF because there are common elements present in plating thickness & base (e.g. Ag,Cu..).

Gold alloy (10/14/18) thickness testing is not possible by XRF because standards available for thickness calibration are in 24K. It is impossible to make 10/14/18 K standards as per plating compositions (Au/Cu & Au/Ag) because it cannot be fabricated. Thickness measurement of low K on XRF is manipulated method, where instrument detects pure gold ions throughout the plating layer & then by density calculation it will be converted into low K plating thickness (e.g.-14 K density is 13 g/cc & pure gold is 19.3 g/cc. so 0.7 micron of 24K is equal to 1 micron of 14K).

The only method to check exact thickness is SEM/EDS where the Jewelry piece is set in resin & cut in cross section to check plating layer pattern & physical thickness. This method is expensive, time consuming & destructive.

REASONS TO RECOMMEND >23 GOLD PLATING

Gold plating composition & color will be the same throughout the plating layer.

Tarnish resistance will be as good as pure gold.

Authentic thickness & purity measurement is possible by simple XRF nondestructive test.

The article can be plated up to 5 micron which will last for minimum 1 year with rough use (with cautious use, it can last for years).

It will allow authentic gold plated product, in the market which will grow customer confidence in plated articles & help the declining Jewelry market because of high gold prices.